

REMARKS

Applicant appreciates the courtesies extended to his representative, Allan Fanucci, during a courtesy telephone interview with Examiner Edna Wong on June 8, 2006. The comments appearing herein are substantially the same as those that were discussed during the telephone interview.

The indication that applicant's previous amendment would be entered is acknowledged with appreciation. To further expedite the prosecution of this application, applicant has amended claims 19 and 31 to include a feature that previously appeared in claims 31 and 37, while also amending the latter claims to be consistent with the former. Now, all claims recite that the substrates are composite articles having electroplatable and non-electroplatable portions (hereinafter "composite substrates"). No new matter has been entered.

To support the patentability of these claims, it is noted that the specification teaches that certain electroplating solutions attack the non-conductive (i.e., ceramic or glass) portions of such composite articles. The table following paragraph [0025] of the application shows that the present invention has essentially no effect on substrates that include a low fired ceramic as the non-conductive portions and that it is a substantial improvement for the plating of such components compared to conventional baths.

Another important feature of the invention is achieved by limiting the amount of complexor to the amount required to complex the metal ions in the electroplating bath. In addition to minimizing the attack of the non-conductive portions of such substrates by free complexor in the solution, the control of the complexor to metal ratio also provides a significant reduction of part agglomeration, particularly when such parts are of small size with flat surfaces, such as what is typically found in composite substrates of the type described herein. The reduction of part agglomeration during electroplating is a further advantage of the current invention.

The previous claims were again rejected as being unpatentable over Japanese patent application 2-301,588 ("the '588 reference") for the reasons set forth in the office action.


Applicant adopts the comments made previously and emphasizes that the '588 reference has no mention of the problems of chemical attack or agglomeration of such composite substrates so that it cannot teach how to resolve such problems as set forth in the present method claims.

As noted in the office action, the '588 reference does not disclose the presently claimed combination of pH range and concentration ratio. In contrast, those parameters are specifically claimed and are critical for obtaining a reduction of part agglomeration during electroplating as well as of minimizing attack of the non-conductive portions during electroplating of the composite substrates. The Rule 132 Declaration of Dr. George Hradil establishes that the presently claimed baths are only stable at the disclosed and claimed pH range. Again, Figures 4 and 5 of the previously submitted technical paper of Hradil and Federman illustrate that improvements in agglomeration (i.e., less coupling) of the parts to be electroplated. Thus, the declaration clearly shows that the presently claimed pH range is in fact critical and this criticality is not disclosed or inherent in the JP '588 reference. The criticality and importance of the metal ion and complexing agent concentrations are also discussed in the specification as well as in the Declaration of Dr. Hradil, and these documents further support the patentability of the present claims.

To advance the prosecution of this application, however, the applicant now presents claims that are commensurate with the unobvious advantages of the invention. These claims are directed to an electroplating method that provides metal electrodeposits on substrates that have electroplatable and non-electroplatable portions and that are intended for electronic applications, while avoiding or not causing significant agglomeration of such substrates during electroplating. Thus, all rejections based on the '588 reference have been overcome so that that rejection should be withdrawn.

Accordingly, it is believed that the entire application is now in condition for allowance, early notice of which would be appreciated.

Respectfully submitted,

  
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